

WHAT IS CLAIMED IS:

1           1. In a computer system executing a plurality of processes, with each process  
2 having its own memory space and having access to a shared memory, an improved method  
3 for allocating shared memory including the acts of:  
4                 maintaining access information identifying all client processes having access  
5 to shared memory;  
6                 at a first process that has allocated additional shared memory;  
7                 obtaining access information identifying a second process  
8 having access to shared memory;  
9                 using a peer mapping system call to request mapping the  
10 additional shared memory into the address spaces of the second  
11 process having access to the shared memory;  
12                 in response to the peer mapping system call, mapping the additional shared  
13 memory into the address space of the second process having access to the shared memory so  
14 that second process has the entire active shared memory mapped into its address space.

1           2. The method of claim 1 wherein said act maintaining access information  
2 includes the acts of:  
3                 maintaining a data structure containing the process IDs of each process having  
4 access to the shared memory.

1           3. The method of claim 1 wherein said act maintaining access information  
2 includes the acts of:  
3                 maintaining a data structure containing descriptive names of each process  
4 having access to the shared memory;  
5                 maintaining a data structure containing the process IDs of each process having  
6 access to the shared memory; and  
7                 mapping the descriptive name of each process to a process ID for the process.

1           4. A computer program product for use on a system including a digital  
2 computer that implements shared memory shared between at least a first and second process,  
3 the computer program product comprising:

4                   a computer usable medium having computer readable program code physically  
5 embodied therein, said computer program product further comprising:  
6                   computer readable program code for causing said digital computer to maintain  
7 access information identifying all client processes having access to shared shared memory;  
8                   computer readable program code, responsive to a peer mapping system call  
9 from said first process, for causing said digital computer to utilize the access information to  
10 map the additional shared memory into the address space of the second process having access  
11 to the shared memory so that second process has the entire active shared memory mapped to  
12 its address space.

1                   5. The computer program product of claim 4 further comprising:  
2                   computer readable program code for causing said digital computer to maintain  
3 information specifying the location of shared memory mapped to each process

1                   6. The computer program product of claim 4 further comprising:  
2                   computer readable program code for causing said digital computer to maintain  
3 a data structure containing the process IDs of each process having access to the shared  
4 memory.

1                   7. The computer program product of claim 4 further comprising:  
2                   computer readable program code for causing said digital computer to:  
3                   maintain a data structure containing descriptive names of each process having  
4 access to the shared memory;  
5                   maintain a data structure containing the process IDs of each process having  
6 access to the shared memory; and  
7                   map the descriptive name of each process to a process ID for the process.

1                   8. The computer program product of claim 4 further comprising:  
2                   computer readable program code for causing said digital computer to update  
3 the mapping of the shared memory into the address space of a started or restarted client  
4 process and return to it pointer to the beginning of a data structure in the shared memory.

1                   9. The computer program product of claim 4 further comprising:

2 computer readable program code for causing said digital computer, for each  
3 process that is sharing the shared memory, to map a header of the shared memory into its  
4 address space and to add process identification information for the process into a header of  
5 the shared memory.

1 10. The computer program product of claim 4 further comprising:  
2 computer readable program code for causing said digital computer to  
3 implement the system call code that expands and shrinks the size of shared memory in a  
4 library that is linked with all the processes that use shared memory;,  
5 computer readable program code for causing said digital computer to  
6 implement the peer mapping system call in the library as a message to the micro kernel.

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